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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/589,222 | 05/11/2007 | Joseph M. DeSimone | 035052/339400 | 5780 |

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| EXAMINER |
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HU, HENRY S

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| ART UNIT | PAPER NUMBER |
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1796

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03/12/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/589,222 | Applicant(s) DESIMONE ET AL. | |
| | Examiner HENRY S. HU | Art Unit 1796 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on IDS of October 7, 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-238 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-238 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10-7-2009, 1-6-2009, 6-12-2008, 9-20-2007, 8-24-</u> | 6) <input type="checkbox"/> Other: _____ |

1. This Application **10/589,222** filing on May 11, 2007 is made from **371/PCT/US05/04421** with a US provisional priority at February 13, 2004. Applicants' **Pre-Amendment** and **six IDS**' (total 17 pages) have been filed so far. Only the typographical or grammatical error on claims is corrected with such a pre-amendment, while no claim is cancelled or added. **Claims 1-238 with a total of twelve independent claims (Claims 1, 24, 34, 53, 120, 128, 139, 146, 163, 187, 208 and 224) are now pending.** An action follows.

DETAILED ACTION

Election/Restrictions

2. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1; this is based on the preliminary search done by the examiner and six IDS' filed by Applicants. In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted as following: It is noted that **twelve** independent claims (**Claims 1, 24, 34, 53, 120, 128, 139, 146, 163, 187, 208 and 224**) are marked with an underline and are combined with its dependent claims.

I. **Claims 1-23, drawn to a microfluidic device. Said device comprises a perfluoropolyether (PFPE) material, wherein the PFPE material is prepared from a liquid**

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PFPE precursor material having a characteristic selected from the group consisting of (i) a viscosity greater than about 100 centistokes (cSt), (ii) a viscosity less than about 100 cSt, provided that the liquid PFPE precursor material having a viscosity less than 100 cSt is not a free-radically photocurable PFPE material, and (iii) combinations thereof.

II. **Claims 24-33**, drawn to **a different microfluidic device**. **Said device comprises a fluoroolefin-based elastomer**, wherein **the fluoroolefin-based elastomer comprises a first monomer and at least one additional monomer**, wherein the first monomer and the at least one additional monomer are different, and wherein: (a) the first monomer is selected from the group consisting of vinylidene fluoride and tetrafluoroethylene; and (b) the at least one additional monomer is selected from the group consisting of a fluorine-containing olefin, a fluorine containing vinyl ether, a hydrocarbon olefin; and combinations thereof.

III. **Claims 34-52**, drawn to **a method of functionalizing the surface of a microscale device**. Said method comprises **a step of forming a layer of a functionalized material**, wherein the functionalized material is selected from the group consisting of a liquid PFPE precursor material and a liquid fluoroolefin-based precursor material.

IV. **Claims 53-119**, drawn to **a method of forming a multiple device**. Said method comprises **two** steps (a)-(b) as specified.

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V. **Claims 120-127, drawn to a method of adhering one of a microscale device, a nanoscale device, and combination thereof to a substrate.** Said method comprises **four** steps (a)-(d) as specified.

VI. **Claims 128-138, drawn to a method of forming one of a microstructure, a nanostructure, and combination thereof.** Said method comprises **six** steps (a)-(f) as specified.

VII. **Claims 139-145, drawn to a different method of forming one of a microstructure, a nanostructure, and combination thereof.** Said method comprises **four** steps (a)-(d) as specified.

VIII. **Claims 146-162, drawn to a method of flowing a material in a microfluidic device.** Said method comprises **two** steps (a)-(b) as specified.

IX. **Claims 163-186, drawn to a method of mixing two or more materials.** Said method comprises **two** steps (a)-(b) as specified.

X. **Claims 187-207, drawn to a method of screening a sample for a characteristic.** Said method comprises **five** steps (a)-(e) as specified.

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XI. **Claims 208-223**, drawn to **a method of separating a material**. Said method comprises **four** (a)-(d) steps as specified.

XII. **Claims 224-238**, drawn to **a method of dispensing a material**. Said method comprises **four** steps (a)-(d) as specified.

3. Where the group of inventions is claimed in one and the same international application, the requirement for unity of invention referred to in Rule 13.1 shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression “**special technical features**” shall mean those technical features that define a contribution which each of the claimed inventions considered as a whole, **makes over the prior art**. The inventions listed as Groups I-XII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, although they share the special technical feature, this special technical feature does not define a contribution over the prior art for the following reasons:

4. In view of Examiner’s own prior art search as well as the references or articles cited in **six IDS**’ filed so far by Applicants, **Claims 1-238** is either obvious or anticipated by following: **US 6,335,224 B1 to Peterson et al., US 6,204,296 B1 to Weers et al. and US 2003/0139521 A1 to Linert et al.**, each individually or in combination. In summary, these twelve groups have no common features in the preparation as well as its application since they are structurally different. The scope of the claims, i.e., the metes and boundaries are distinct. Accordingly, the special

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technical feature linking the inventions, the liquid PFPE precursor as disclosed in Group I, does not provide a contribution over the prior art, and no single general inventive concept exists.

Therefore the restriction is appropriate.

5. With respect to the fact that “all twelve groups are **structurally different** each other”, **Groups I-XII** was each drawn to fundamentally still different subject matter. For instance, Groups I and II is each related to a different microfluidic device, which Groups III-XII is each related to different process for different application.

6. Although the subject matter from each group may comprise the same liquid PFPE precursor as disclosed in Group I, its structure, function, property and application are indeed different. The key point is that the individual property of monomer or precursor will not show up completely in polymer due to the much higher molecular weight in polymer. They are thereby not equivalent and interchangeable.

7. Because these inventions are distinct for the reasons given above shown as different subject matters and the search required for each group is not required for other groups have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

8. Because these inventions are distinct for the reasons given above and the search required for each group is not required for other groups have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

9. It is noted that no phone call was made to **Attorney W. Murray Spruill (registration # 32,943; tel: 919 862-2200)** by the examiner due to the complexity on multiple (twelve) distinct groups along with multiple (twelve) independent claims. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

10. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Conclusion

11. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (571) 272-1119. The **fax** number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D. Mulcahy/
Primary Examiner, Art Unit 1796

/Henry S. Hu/
Examiner, Art Unit 1796

March 8, 2010